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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,870	08/09/2006	Florence Clement	1022702-000302	8284

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EXAMINER
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GRAY, JILL M

ART UNIT	PAPER NUMBER
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1782

NOTIFICATION DATE	DELIVERY MODE
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08/05/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com  
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<b>Office Action Summary</b>	<b>Application No.</b> 10/565,870	<b>Applicant(s)</b> CLEMENT ET AL.	
	<b>Examiner</b> Jill Gray	<b>Art Unit</b> 1782	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) \_\_\_\_ is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

### **DETAILED ACTION**

1. Pursuant to the entry of the amendment of May 12, 2010, the status of the claims is as follows: Claims 22, 26-43 are pending. Claims 1-21 and 23-25 are cancelled. Claim 43 is new. Claims 22 and 26-36 are amended.
2. The objection to the abstract and objections to the specification are moot in view of applicants' amendments.
3. The rejection of claims 22 and 26 under 35 U.S.C 112, second paragraph is moot in view of applicants' amendments.

### ***Claim Rejections - 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 22-23, 26-27, and 29-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thoma et al., 3,893,981 (Thoma).

#### **Regarding Independent claim 22**

Thoma discloses yarn obtained from a composition comprising a polymer matrix formed from the polycondensation of monomers that can be lactams such as caprolactam, lauryl lactam or an aminocaproic acid in the presence of a difunctional compound that can be a monomer of b) or b'), such as adipic acid, sebacic acid, isophthalic acid or terephthalic acid, wherein said lactam are present in amounts of up to 100 mol%. The macromolecular chains of formula (II) are not required to be present. See entire document, and for example, abstract, column 2, lines 61-65 and column 3, lines 29-36 and Example 11.

Thoma does not specifically disclose that his yarns are abrasion-resistant or the specific structure of formula (I).

In this regard, Thoma discloses the formation of a polymer matrix that has recurring structural units that have close structural similarities to the generic formula (I) of present claim 22. See for example, column 4, lines 32-60. Also, Thoma discloses the polycondensation of monomers that are of the same type as those disclosed by applicants as being suitable, such as lactams i.e. caprolactam, wherein this polycondensation takes place in the presence of a difunctional compound, such as adipic acid. This is the same process disclosed by applicants in their examples. Note [0155] of US 2006/0275604. Hence, the prior art product is produced by an identical or substantially identical process as that of the inventive polyamide. Therefore, the examiner has reason to believe that the resultant polymer is the same as or substantially similar to that claimed by applicants, and would have the same properties, such as abrasion resistance and that the generic formula (I) fully embraces the polyamide of Thoma, in the absence of factual evidence to the contrary. "When the claimed and prior art products are identical or substantially identical in structure or composition, **or are produced by identical or substantially identical processes**, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562, F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not". *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). See MPEP 2112.01.

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Regarding dependent claims 23, 26-27, and 29-42

Regarding claim 23, Thoma is as set forth above and further discloses the formation of polyamides. See entire document and abstract.

Regarding claim 26, Thomas is as set forth above and discloses up to 100 mol% of the polyamide structural units. See column 2, lines 49-57.

Regarding claim 27, as set forth above, Thoma teaches a polymer matrix that has recurring structural units that have close structural similarities to the generic formula (I) of present claim 22 and the polycondensation of the same type of monomers contemplated by applicants. Accordingly, the examiner has reason to believe that the resultant polymer is the same as or substantially similar to that claimed by applicants, and would have the same properties, such as a molecular weight amount that is within the claimed range of at least 25000 g/mol, in the absence of factual evidence to the contrary. "When the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562, F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not". *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). See MPEP 2112.01.

Regarding claims 29-30 and 33-34, Thoma discloses that his polyamide is obtained by copolymerization from a mixture that includes a difunctional compound that

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can be a monomer of b) or b'), such as adipic acid, sebacic acid, isophthalic acid or terephthalic acid. Thoma further discloses that this compound is present in an amount of 1.0 to 2.0 mol%. This teaching would render obvious the requirement of claim 30 of between 0.05 and 1 mol%, because the 1 mol% as taught in the prior art is sufficiently close to applicants' upper limit of 1mol% that the skilled artisan would reasonably expect the properties of the resultant polyamide to be the same or substantially similar. See column 3, lines 45 through column 4, and line 10.

Regarding claims 31-32 and 35-36, in claims 31 and 35, the phrase "melt-blending" is drawn to the method of making the polyamide, thereby resulting in a product-by-process claim. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113. There is no clear difference in the end product, i.e. the yarn of the prior art and that of the present invention. Claims 32 and 36 are reliant upon the process limitations of present claims 31 and 35. In addition, as set forth above, and incorporated herein, Thoma discloses that the difunctional compound can be present in amount within the claimed range set forth in present claims 32 and 36. Note Example 1, which teaches the adipic acid present in an amount of about 0.8 wt% with respect to the weight of the

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polyamide. As to claim 35 and the compound of formula (V), the teaching at column 3, lines 55-62 of Thoma render obvious this requirement.

Regarding claims 37-42, Thoma discloses the formation of articles comprising his yarns, such as textiles and fabrics, or foils. This teaching renders obvious the formation of a felt (claim 38), fabric (claim 41) and a net (claim 42). As to claims 39 and 40, the formation of carpets or rope or belts from yarns would have been obvious to one of skill in this art at the time the invention was made and is not construed to be a matter of invention, in the absence of specific properties that are directly related to the these end products.

Therefore, the teachings of Thoma would have rendered obvious the invention as claimed in present claims 22-23, 26-27 and 29-43.

6. Claims 22 and 26-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cucinella et al., 6,160,080 (Cucinella), for reasons of record.

Regarding Independent claim 22

Cucinella discloses a polyamide that can be used to make yarns, said polyamide being formed from a polycondensate having macromolecular chains that are structurally similar to those of formula (I) of present claim 22. See entire document, and for example, columns 1-4 and column 5, line 12.

Cucinella is silent as to the yarns being abrasion resistant.

In this regard, Cucinella discloses the formation of a polymer matrix consisting of a polycondensate composed of macromolecular chains that is the same as or has close

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structural similarities to the generic formula (I) of present claim 22. See for example, columns 1-4. Also, Cucinella discloses the polycondensation of monomers that are of the same type as those disclosed by applicants as being suitable, such as lactams that can be caprolactam. Note Example 1. Accordingly, the examiner has reason to believe that the resultant polymer is the same as or substantially similar to that claimed by applicants, and would have the same properties, such as abrasion resistance and that the generic formula (I) fully embraces the polyamide of Cucinella, in the absence of factual evidence to the contrary. "When the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562, F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not". *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). See MPEP 2112.01.

Regarding dependent claims 23 and 26-43

As to claim 23, Cucinella discloses a polyamide.

Regarding claims 27, Cucinella discloses that the molecular weight can be greater than 10,000. See column 3, lines 32-37.

Regarding claim 26, Cucinella discloses that the polyamide is present in an amount of 30% and 80% by mass of with respect to the total mass of the polymer. See claim 14. It is the examiner's position that the weight percents taught by Cucinella



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would result in a mol% that is at least 45 mol%. Moreover, it is the examiner's position that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 105 USPQ 233 (CCPA 1955).

Regarding claim 28, Cucinella discloses that R2 can be a pentamethylene radical. See claim 3 and column 2, lined 56-60.

Regarding claims 29-30 and 33-34, Cucinella discloses that his polyamide can be obtained by copolymerization of a mixture of monomers comprising a polyfunctional compound and monomers having structures that are the same as or substantially similar to formulae (IIIa) and (IIIb). See column 3, lines 37-63. Regarding claim 30, Cucinella teaches that the compound is present in small amounts, such as less than 20% by weight. See column 4, line 66 through column 5 and line 2. It is the examiner's position that amounts of less than 20% by weight would fully embrace the present claimed 0.05 and 1 mol%.

Regarding claims 31-32 and 35-36, in claims 31 and 35, the phrase "melt-blending" is drawn to the method of making the polyamide, thereby resulting in a product-by-process claim. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP

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2113. There is no clear difference in the end product, i.e. the yarn of the prior art and that of the present invention. Claims 32 and 36 are reliant upon the process limitations of present claims 31 and 35. In addition, as set forth above, and incorporated herein, Cucinella discloses that the polyfunctional compound can be present in amount within the claimed range set forth in present claims 32 and 36, i.e., less than 20 wt%. As to claim 35 and the compound of formula (V), the teaching at columns 3-4, render obvious this requirement.

Regarding claims 37-42, Cucinella discloses that the polyamide can be used in the formation of yarns and various articles. As to the specific articles, it would have been obvious to one of ordinary skill in this art at the time the invention was made to form yarn into various known products such as textiles, carpet, rope, felts, etc. during routine experimentation and is not construed to be a matter of invention, in the absence of specific properties that are directly related to the these end products.

Therefore, the teachings of Cucinella would have rendered obvious the invention as claimed in present claims 22-23 and 26-43.

### ***Response to Arguments***

7. Applicant's arguments filed May 12, 2010 have been fully considered but they are not persuasive.

Applicants argue that Thoma does not disclose or suggest each feature recited in independent claim 22, further arguing that Thoma does not disclose or suggest a polyamide comprising macromolecular chains corresponding to the formula (I), further arguing that the Patent Office has relied upon Thoma for disclosing the structural units

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at column 4, lines 32-60, and the use of lactams, and it is unclear how the usage of such structural units and lactam would have necessarily resulted in the formation of the claimed polymer matrix comprising a polyamide comprising macromolecular chains corresponding to the formula (I), thus the Patent Office has not established with requisite certainty that employing the Thoma materials would have necessarily resulted in the claimed macromolecular chain structure.

In this regard, as set forth above, Thoma discloses the polycondensation of monomers that are of the same type as those disclosed by applicants as being suitable, such as lactams i.e. caprolactam, wherein this polycondensation takes place in the presence of a difunctional compound, such as adipic acid. This is the same process disclosed by applicants in their examples note [0155] of US 2006/0275604. Hence, the prior art product is produced by an identical or substantially identical process as that of the inventive polyamide. "When the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562, F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

Applicants argue that Cucinella does not disclose or suggest each feature recited in independent claim 22, for example, Cucinella does not disclose or suggest a polyamide comprising macromolecular chains corresponding to the formula (I) as recited in claim 22, further arguing that the formula (I) compound of Cucinella in which m is an integer between 3 and 8 does not correspond to the claimed macromolecular

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chains of the claimed formula (I) and that Cucinella teaches the combined use of a star polyamide of formula (I) and a linear polyamide chain of formula (II) and that it would not have been obvious to modify the star polyamide disclosed by Cucinella to arrive at the claimed macromolecular chain of formula (I).

In this regard, it is the examiner's position that R1 of formula (I) is not limited to a divalent species nor is it restricted from being further substituted. Also, the star polyamide structure is not prohibited by the formula (I) because A is defined as an aliphatic hydrocarbon radical, which can optionally include heteroatoms.

Applicants argue that the comparative examples B1, B2 and B3 in the specification employ star polyamides and exhibit inferior abrasion resistance properties in comparison with inventive examples employing a polyamide comprising macromolecular chains corresponding to the formula (I).

In this regard, it is the examiner's position that applicants' comparative data is insufficient to overcome the prior art rejections. In particular, it is clear from the data in the Table 1 that the abrasion resistant property is not unexpected, as evidenced by the showing that all of the fibers have some amount of abrasion resistance and there is no clear baseline. Moreover, it is noted that fibers A3 and A4 of polyamide-6 have abrasion resistance properties that are equivalent to and even greater than that of the inventive polymers. Nor can the abrasion resistance of the inventive polymers be construed as superior to that of the polyamide-6 polymers. As to the comparison to the star polyamides, B2 and B3, applicants' claims do not exclude star polyamides. As set forth above, R1 of formula (I) is not limited to a divalent species nor is it restricted from

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being further substituted. Also, the star polyamide structure is not prohibited by the formula (I) because A is defined as an aliphatic hydrocarbon radical, which can optionally include heteroatoms. Thus, any showing of inferiority of the star polyamide would embrace that which is covered by the present claims. Accordingly, the comparative data in the specification is insufficient to overcome the prior art rejections.

No claims are allowed.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicants' attention is directed to all documents cited on the PTOL-1449. In particular, applicants' attention is directed to Myard et al., WO03/029350, US 7,323,241 B2, relied upon as an English translation. Myard discloses yarns and fibers formed from a polyamide having macromolecular chains which is obtained by the copolymerization of a mixture of monomers of the type contemplated by applicants. See entire document, abstract and column 4, lines 11-57. In addition, Myard discloses that his polyamide comprises star macromolecular chains and linear macromolecular chains. Note column 7, lines 11-17.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jill Gray whose telephone number is 571-272-1524.

The examiner can normally be reached on M-Th and alternate Fridays 10:00-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on 571-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jill Gray/  
Primary Examiner  
Art Unit 1782

jmg

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